Surgical, Pharmacological, and Technological Advances

Highlights from the NYU Post-Graduate Medical School Course
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More than 300 urologists, representing about 40 states and 10 countries, attended the New York University (NYU) postgraduate course entitled "Surgical, Pharmacological, and Technological Advances in Adult and Pediatric Urology: State-of-the-Art." The major topics included lasers in urology, testicular cancer, infertility, erectile dysfunction, pediatric urology, and minimally invasive urology/stones. State-of-the-art lectures were delivered on continent urinary diversion, prostate cancer, benign prostatic hyperplasia (BPH), and incontinence. There were 8 distinguished visiting guest faculty and 10 NYU faculty speakers. This review will summarize the most clinically relevant presentations. Affiliations of faculty members are listed on page 153.

Lasers in Urology

Penile cancer and condyloma [Dr Dixon]. Lasers are used increasingly for the management of penile lesions, such as condylomata, squamous cell dysplasia, and carcinomas. Tietjen and Malek investigated lasers to treat 52 men who had squamous cell dysplasia and carcinoma of the penis. The recurrence rate for squamous cell dysplasia, tumor in situ, and T1 disease was 5.9%, 8.3%, and 14.3%, respectively. Intraoperative biopsy mapping showed that dysplastic areas were 30% larger than visual lesions, a factor that should be taken into account when managing penile lesions with lasers. One of the primary advantages of laser treatment is that meatal lesions can be managed without significant strictur-ing. The cosmetic and functional results following laser treatment are far better than with partial penectomy. Lasers have also been used successfully in the management of penile condylomata. A low-power carbon-dioxide laser is useful for condylomata, but it is advisable to excise a condyloma for histologic evaluation and viral typing. The Nd:YAG laser can also manage larger condylomata, especially those involving the meatus. An important caveat: aggressive follow-up is essential when lasers are the choice for the management of penile lesions.

BPH [Dr Dixon]. Visual laser ablation of the prostate (VLAP), transurethral electrovaporization of the prostate (TUEP), contact and holmium lasers, and interstitial laser coagulation (ILC) have all been investigated for the management of BPH, and all are associated with significant clinical effectiveness. The relative cost/risk/benefit when compared with transurethral resection of the prostate is still controversial, however. The VLAP, or free-beam, side-firing laser, generated a great deal of enthusiasm in the 1990s but is no longer widely used. An advantage of the holmium laser is that it can resect the gland. The TUEP forms more of a channel defect. The ILC system is being aggressively marketed, and uncontrolled studies show significant clinical effectiveness. The advantages of ILC are that it can be performed rapidly, it is associated with a fairly aggressive ablation, the technique is easy to learn, and the procedure is reimbursed. The primary disadvantage is that, typically, there is protracted catheter time. In addition, no comparative long-term or sham control trials have been reported.

Bladder cancer [Dr Manyak]. Photodynamic therapies are being used for the management of superficial bladder cancer. In patients with carcinoma in situ (CIS) in whom intravesical therapy failed, photodynamic therapy resulted in a 44% complete response rate. Disease recurrence and progression developed in several of the patients with initial complete response rates and, ultimately, they underwent cystectomy. One of the disadvantages to patients of photodynamic therapy is the restriction from exposure to sunlight.

Testicular Cancer

Overview [Dr Taneja, moderator]. While research during the last 20 years has allowed cure in the majority of patients with testicular cancer through an aggressive, multimodal, empiric thera-

Meeting reviewed by Herbert Lepor, MD, New York University School of Medicine, New York.

peutic approach, recent efforts have focused on the reduction of therapeutic morbidity and unnecessary therapy. This has been attempted through the selection of patients in need of therapy based on previously demonstrated prognostic variables.

Stage I testicular cancer [Dr Taneja]. Patients with no demonstrable disease following radiologic evaluation but with elevation of serum markers following orchiectomy should not be categorized as having stage I disease. These patients should be considered to have metastatic disease and should receive chemotherapy as a primary treatment.

While empiric retroperitoneal lymph node dissection (RPLND) has resulted in cure in a large number of patients, roughly 70% of patients undergo surgery unnecessarily and, despite surgical resection, 6% to 8% of patients will experience recurrence outside the retroperitoneum. Authors of observation series have advocated careful follow-up to identify early recurrence and treatment only at the time of recurrence. While many of these authors have reported survival results comparable to surgical series, high-risk patients are often excluded from observation. More important, compliance is a serious problem within observation series; in the United States, young people are generally migratory, which presents a major dilemma in attempting to follow patients.

Use of adjuvant chemotherapy following orchiectomy has never achieved the popularity in the United States that it has in Europe. Two cycles of bleomycin/etoposide/cisplatinum (BEP) have been administered to patients with high-risk stage I testicular cancer by a number of investigators. This protocol is well-tolerated, with a lower likelihood of long-term pulmonary fibrosis, when compared with 4 cycles of chemotherapy. None of the 2-cycle protocols have achieved long-term follow-up, however, so long-term toxicity cannot be assessed. Survival has been slightly less than in surgical series, but low-risk patients were excluded from these studies.

In assessing risk for nodal disease, vascular invasion, embryonal cancer comprising more than 50% of the testicle, and the presence of choriocarcinoma are the most important predictors to be assessed. Factors such as tumor marker status, small amounts of teratoma, and ploidy remain to be validated. A risk-stratified approach in testicular cancer may be appropriate. The use of 2 cycles of BEP in high-risk patients, RPLND in moderate-risk patients, and observation in low-risk patients has been followed in Europe, with good results. It should be pointed out that patients with significant teratoma in the primary orchiectomy specimen should likely undergo RPLND and that those patients who are deemed questionable in terms of future compliance should not be enlisted for an observation protocol.

With regard to seminoma, risk factors are less well established. Tumor size larger than 6 cm, vascular invasion, and tumor necrosis are the major prognosticators of poor risk. While the adjuvant chemotherapy experience with seminoma is limited, the use of observation has been popularized recently for patients who have low-risk disease.

Nerve-sparing RPLND [Dr Rowland]. In performing a right-sided nerve-sparing procedure, sympathetic nerve fibers generally can be identified and isolated coursing above the lumbar veins on the medial surface of the vena cava within the interaortocaval groove. The lumbar veins are ligated and divided, and the nerve fibers are exposed and controlled with a vessel loop. The lymphadenectomy can then be performed in the standard split-and-roll technique. On the left, the nerve fibers are identified coursing over the aorta above the aortic insertion of the inferior mesenteric artery and are controlled in a similar fashion. With nerve sparing, there is a rate of normal seminal emission and ejaculation in 99% to 100% of patients. (Dr Rowland is a strong advocate of primary RPLND for stage I disease and feels that long-term sequelae of chemotherapy approaches, particularly in secondary malignancy, remain to be determined.)

Chemotherapy for testicular cancer [Dr Chachoua]. Recent data suggest that 4 cycles of etoposide and cisplatin can be substituted safely for 3 cycles of BEP to avoid the risk of bleomycin toxicity. (Dr Chachoua remains an advocate of the BEP regimen.) In patients following a lymph node dissection demonstrating metastatic disease, comparative data suggest that recurrences can be reduced from 35% to 0% with the use of immediate chemotherapy. (Dr Chachoua recommends delaying therapy until time of recurrence to avoid unnecessary chemotherapy for patients in whom recurrence would not develop.)

Postchemotherapy RPLND [Dr Rowland]. Patients who relapse after complete response should be considered to have had a partial response. Treatment of patients who are marker-negative partial responders should be treated via RPLND, followed by observation if only teratoma or scarring is found. In patients with elevated markers, salvage chemotherapy or a bone marrow transplant is used. If markers are relatively low (α-fetoprotein less than 100 ng/mL and human chorionic gonadotropin [HCG]-β less than 50 mg/mL) and disease is localized in the retroperitoneum, RPLND can be attempted. In patients with cancer identified in the surgical specimen, the need for additional chemotherapy is based on the completeness of the resection and the normalization of serum markers.

As a technical point, the tumor mass should be excised initially by developing a plane along the anterior surface of the great vessels. This will facilitate identification of vascular structures and ureters, which may be

densely adherent to the mass. Nerve-sparing is possible in roughly 20% of patients undergoing postchemotherapy RPLND; 76.5% of such patients retained ejaculatory ability in the Indiana University experience.

Infertility in testicular cancer [Dr McCullough]. Infertility is found in 50% of patients with testicular cancer, and the cause is multifactorial. Contributing etiologies include possible environmental toxins, intrinsic tumor-associated hormonal influences, presence of CIS in the residual testicle, genetic instability of the germinal epithelium, autoimmune processes, chemotherapeutic agents, radiation, and surgical techniques that might affect ejaculation. While the etiology is not always clear, with thoughtful planning and modern-day assisted reproductive techniques, such as in vitro fertilization (IVF) with intracytoplasmic sperm injection (ICSI), genetic paternity should almost always be possible, even in what may appear to be hopeless cases.

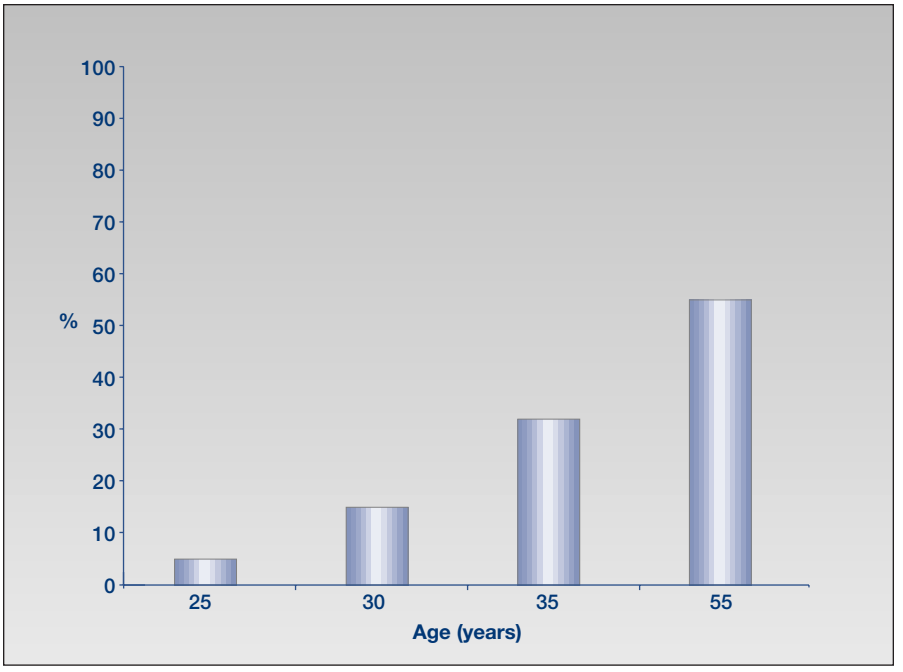

Figure. *Incidence of infertility according to age.*

Infertility

Assisted reproductive technologies [Dr Grifo]. The single best predictor of outcomes using assisted reproductive technologies is maternal age; the incidence of infertility in women increases with age (Figure). Advancing maternal age is associated with suboptimal ovarian responses to ovulation stimulation, reduced egg fertilization, reduced rates of embryo implantation, and increased spontaneous abortion rates. The aging egg negatively affects the quality of the subsequent embryo. Embryo quality appears to be the major factor negatively influencing implantation in the older population. It is unclear whether diminished reproductive capacity is caused by the nuclear or cytoplasmic component of the egg.

ICSI has had a great impact on improving outcomes for infertile couples. Injection of sperm directly into an egg has been associated with fertilization rates higher than 60%, regardless of sperm morphology or motility. Successful fertilization and clinical pregnancies have been reported with ICSI using sperm obtained from microsurgical epididymal sperm aspiration in cases of obstructive azoospermia or from testicular sperm extraction in men with spermatogenic arrest. To date, there has been no observed increase in the rate of congenital or developmental anomalies in children born as the result of ICSI. There has been a slight but significant increase in the rate of sex chromosome anomalies, which may affect the possibility of transmitting the "infertility factor" to male offspring.

Preimplantation genetic analysis [Dr Grifo]. This technique involves removing a single cell from an 8-cell embryo and rapidly testing for a specific genetic disease before embryo transfer. In the experience at NYU, this manipulation does not decrease embryo viability or negatively affect live offspring. With fluorescent in situ hybridization, there is direct visualization of specific chromosomes. This technique allows for the successful diagnosis and delivery of a baby free of single-gene defect disorders, such as cystic fibrosis (CF) and Tay-Sachs disease. The technique can also be used for assessing aneuploidy of chromosomes X, Y, 21, 18, 16, and 13.

Genetics of male infertility [Dr Oates]. Male factor plays a role in approximately 50% of all cases of couple infertility. Nonobstructive azoospermia (NOA) occurs when there is a normal volume of ejaculate; absence of spermatozoa; small, soft testes; palpably normal vasa and epididymis; and an elevated follicle-stimulating hormone level. To make the diagnosis of NOA, a semen specimen must be centrifuged. There seems to be an azoospermia factor (AZF) region on the Y chromosome that may be responsible for some cases of NOA. The AZF region appears to be localized to large Yq11, and the AZFc region appears to be the site of the deleted azoospermia (DAZ) gene cluster. Approximately 13% of azoospermic men have a microdeletion of the Y chromosome, which eliminates the DAZ gene cluster. It is interesting that al-

most all of the fathers of men with confirmed AZFc region deletions are themselves normal when peripheral leukocytes are assayed. What is constant in all of the AZFc region deletions is the severe depletion of functional spermatogonia and a significant reduction in spermatogenesis.

Another genetic entity associated with infertility is the Klinefelter syndrome. This syndrome is relatively common (1 in 500 men) and can be detected by karyotype analysis (47, XXY). There is a spectrum of phenotypic presentation, since all such men are not necessarily tall and eunuchoid and may not be hypogonadal. The diagnosis should be suspected in men who have azoospermia or profound oligospermia with small testes (less than 5 cc each). Sperm may be found in the testicular tissue upon harvesting in 20% of men with Klinefelter syndrome.

Vasal maldevelopment is the principal manifestation of the genetic conditions that are known to be responsible for cases of obstructive azoospermia. CF is associated with bilateral vasal aplasia. The CF gene is located on chromosome 7 and encodes the CFTR protein, which is critical in the regulation of chloride ion transport across the epithelial cell membrane. This protein is found in the lining of pulmonary airways, pancreatic ducts, vas deferens, and seminal vesicles and in two thirds of the epididymis. If the absolute amount of functional CFTR protein falls below a certain limit, vasal agenesis, pulmonary disease, and pancreatic ductal occlusion occur, and the patient is classified as having clinical CF. It is conceivable that there is sufficient protein for normal pulmonary and pancreatic development and that the only lesion is vasal agenesis. There have been 700 mutations in the CF gene, which have resulted in a spectrum of clinical disease. All men with congenital bilateral absence of the vas deferens should have a CF mutation analysis. Their partners must also be screened to prevent the homozygous defect in offspring.

Varicoceles [Dr McCullough]. Seven issues are of special importance: Does varicocelectomy cure male factor infertility? Does it improve seminal parameters? Is ultrasonography necessary for everyone? Are subclinical varicoceles relevant? What is the best technique of repair? Is there a role in azoospermia? Should we repair pediatric varicoceles?

Does varicocelectomy improve seminal parameters? Improvement in seminal parameters will be seen in 60% to 80% of patients following varicocele repair, with a pregnancy rate approaching 35%. Varicocelectomy results in improvement in sperm count, motility, and morphology; Leydig cell function; and testicular histology and size.

Is ultrasonography necessary for everyone? The value of duplex color Doppler ultrasonography is in identifying other pathologic conditions of the testis, accurately measuring testicular size, documenting the size of the veins and peak venous flow, and better identifying subclinical varicoceles.

Is there a role for varicocele repair in azoospermic men? Varicocele repair does appear to be clinically indicated in azoospermic men. Sperm will appear in a significant proportion of men after repair, such that sperm in the ejaculate may be adequate for IVF using ICSI in as many as 20% of such cases. In 1 series, 10% of nonobstructive azoospermic men achieved unassisted pregnancies following varicocele repair.

What is the best technique for repair? There are several ways to manage a varicocele, including embolization; high, inguinal, subinguinal, or laparoscopic ligation; or sclerotherapy. The recurrence and complication rates appear to be lowest with a microsurgical subinguinal approach. The causes for recurrences include missed veins, ineffective ligation, or cremasteric reflux.

Should we repair pediatric varicoceles? Approximately 15% of adolescents will have a varicocele. Indications for repair include ipsilateral hypotrophy, grade II-III varicoceles with ipsilateral softer testis, grade III varicoceles, exaggerated response to gonadotropin-releasing hormone, and pain. Varicocele repair in adolescents has been associated with an 89% catch-up in testicular growth.

In summary, varicocelectomy cures male infertility in some cases and can improve all seminal parameters. Duplex color Doppler ultrasonography provides useful clinical information. Subclinical varicoceles are relevant, and the best approach is a subinguinal microsurgical approach. There is a role for varicocelectomy in the patient with azoospermia and in adolescents with ipsilateral hypotrophy, large varicoceles, and pain.

Erectile Dysfunction

Medical therapies [Dr Carson]. Approximately 20% to 30% of men have erectile dysfunction. The majority of erectile dysfunction has an organic cause. Smoking, hypercholesterolemia, diabetes, alcohol abuse, depression, medications, and surgical trauma are the primary causes of erectile dysfunction. The treatment of patients with erectile dysfunction includes sexual counseling, oral medications, hormonal replacement, intracavernous injection of vasoactive drugs, and surgical intervention.

In hypogonadal men, testosterone replacement can be very successful. The primary advantage of the testosterone patches is that they restore the circadian rhythm of testosterone while estradiol levels remain normal. The patches are almost 10 times more expensive than intramuscular injection. The primary limitation of oral agents is hepatotoxicity.

Sildenafil citrate (Viagra) is a phosphodiesterase-5 (PDE-5) inhibitor that has been FDA-approved for more than 18 months for the treatment of pa-

tients with erectile dysfunction. The effectiveness of sildenafil depends on the etiology of the erectile dysfunction. Approximately 80% of men with erectile dysfunction secondary to spinal injury will be able to maintain erections adequate for intercourse following treatment with sildenafil. The drug is less effective in men who have had radical prostatectomy and in those with diabetes. Age does not appear to be an important parameter predicting the success of sildenafil. Since its approval, no new data have arisen to contradict the drug's demonstrated safety.

IC351 is a drug presently in clinical development that may be a more selective PDE-5 antagonist than sildenafil. The clinical significance of this receptor selectivity has yet to be established.

Clinical trials for phentolamine (Vasomax), a nonselective α-blocker, demonstrated some level of effectiveness; however, because the drug induced neuroendocrine tumors in animal models, the drug development program has been suspended.

Apomorphine (Uprima) is a dopamine receptor agonist for the management of erectile dysfunction that will soon be marketed; its most common side effect is nausea. Patient and partner satisfaction have been significantly better among men taking 4 mg of the drug when compared with placebo. In the clinical trial, at baseline, 28% of men had erections firm enough for intercourse. Following treatment, 51.2% and 27.8% (respectively) of men in the apomorphine and placebo groups were able to have erections adequate for intercourse.

At the present time, alprostadil (Caverject) is the most commonly used preparation for intracavernous injections, but one of the problems with its use is pain. A new injectable form is under development that is a combination of a vasointestinal polypeptide and phentolamine. This preparation has been associated with no pain and with decreased fibrosis and priapism.

Main Points

- Meatal lesions can be managed by lasers, with excellent cosmetic results and without significant stricturing.
- In patients with testicular cancer, orchiectomy followed by observation (rather than by adjuvant chemotherapy) is an option, but patient compliance with follow-up is a serious problem.
- The cause of infertility found in 50% of patients with testicular cancer is multifactorial.
- Maternal age is the best predictor of outcomes in patients using assisted reproductive technologies.
- Intracytoplasmic sperm injection is associated with fertilization rates higher than 60%.
- Adolescents can achieve 89% catch-up of testicular growth after varicocele repair.
- Fetal ultrasonography can detect congenital anomalies in utero that predispose patients to urinary tract infections.

There are significant efforts to develop a topical formulation to decrease the need for intracavernous injections. Topiglin is a combination of alprostadil and SEPA, a drug delivery vehicle. The topical formulation, placed in a condom, has been associated with some irritation. In 1 study, the percentage of men able to achieve an erection adequate for intercourse in the drug and placebo groups was 75% and 17%, respectively.

Sexual function after radical prostatectomy [Dr McCullough]. There is no doubt that nerve-sparing radical prostatectomy has dramatically improved potency rates, which vary significantly in the literature—from 10% to 70%. The significant variability in potency rates reflects the relative experience and ability of different surgeons to preserve the cavernous nerves, whether 1 or both nerves can be preserved, the age and baseline sexual function of men undergoing radical prostatectomy, and the mechanism for determining postoperative erectile function. It appears that the primary mechanism for postprostatectomy erectile dysfunction is neural injury. Arterial and venous damage appear to be less significant.

The effectiveness of sildenafil is related to the time interval from surgery to treatment. Sildenafil is almost invariably ineffective in those men who have undergone radical prostatectomy within 3 months and have no evidence of spontaneous erectile function. On the other hand, sildenafil has been shown to be effective in some men who had no early postsurgery erectile function but were treated 1 year or longer after radical prostatectomy. Men with some postoperative spontaneous erectile function also exhibit better responses to sildenafil, compared with those who have no spontaneous function. This is consistent with the mechanism of action of sildenafil, which inhibits the breakdown of cyclic guanosine monophosphate that is formed in response to nitric oxide release following nerve stimulation. If there is no innervation, then sildenafil should be ineffective. The return of erectile function following radical prostatectomy is felt to be dependent on reversal of a neurapraxia or reinnervation. As this process occurs, sildenafil becomes more effective.

Does intervention with prophylactic use of intracavernous, intraurethral, or oral medications decrease the time for return of erections following radical prostatectomy? Placebo-controlled studies from Italy provide some evidence that immediate postoperative treatment with injection therapy improved the rate of recovery of erectile

function. The rationale is that corporal smooth muscle atrophy may occur when the penis is not stimulated. Intracavernous injections may inhibit this atrophy. A randomized, double-blind, placebo-controlled trial in the United States examining daily sildenafil versus placebo following radical prostatectomy is under way. The results of this study should be available in the next year.

Gene therapy and erectile function [Dr Lue]. At the University of California, San Francisco, with use of an adenovirus vector, penile production of nitric oxide in rats was increased following cavernous nerves transection. Erections can be improved by overexpressing a potassium channel opener that causes hyperpolarization, thereby decreasing contraction and increasing erectile function. Vascular endothelial growth factor (VEGF) is a growth factor that regulates angiogenesis. One can simply inject VEGF directly into the penis or overexpress VEGF in the penis using an adenovirus vector. VEGF intervention may have a beneficial role in the treatment of vasculogenic erectile dysfunction. In a rat model, the internal iliac artery was ligated, which induced a decrease in erectile function. Following injection of VEGF, the normal penile intracavernous pressures were restored. A similar therapeutic effect was produced with a gene therapy mechanism.

Some interesting experiments may have implications related to regrowth of nerves. Growth hormone has been shown to promote recovery of erection in animal models following excision of cavernous nerves. Neurotropin may be important in nerve regeneration. Brain-derived neurotrophic factor (BDNF) has been characterized, and can be expressed in the penis, using an adenovirus vector. Overexpressing BDNF in the penis using this technology has been associated with an increase in penile tissue after cavernous nerve injection. It appears as though BDNF may increase nitric oxide synthase expression in the penis.

Pediatric Urology

Urinary tract infection (UTI) and reflux [Dr Kogan]. UTIs are generally more common in girls than in boys. The incidence of systemic UTIs in girls and boys is 3% and 1%, respectively. During the first 6 months of life, UTIs are more common in boys, and uncircumcised boys appear to have a significantly higher incidence of UTIs. Approximately 20% of children with a single confirmed UTI will have reflux.

The indication for a workup includes a UTI associated with systemic illness. The workup to identify reflux should begin as soon as the infection has cleared and should include renal and bladder ultrasonography and voiding cystourethrography (VCUG). A dimercaptossuccinic acid (DMSA) scan may be important to identify scarring.

Many congenital anomalies that produce a predisposition to UTIs are being diagnosed in utero with routine fetal ultrasonography. To prevent renal scarring, prophylactic antibiotics are recommended at birth and should be continued until the VCUG becomes negative.

Undescended testis [Dr Shapiro]. The incidence of undescended testis is 3.4% in full-term infants and decreases to 0.8% at 1 year. It is now recommended that undescended testes be repaired at age 1 to prevent testicular damage. When orchiopexy was performed in infants 6 months and younger, all testes appeared histologically normal. If the orchiopexy was delayed until age 2, 30% to 40% of the testes were aspermatogenic. Fertility also appears to be related to the timing of orchiopexy. When orchiopexy was performed before age 2, 90% of men were fertile. The incidence of fertility was only 50% and 30% when orchiopexy was performed between ages 3 and 4 and ages 9 and 12, respectively.

The presence of an undescended testis and hypospadias is associated with an intersex condition in 27% of cases. If the testis is palpable, the incidence of intersex is 20%, compared with 40% when the testis is nonpalpable. The severity of the hypospadias correlates with the incidence of an abnormality of genotypical or gonadal sexual differentiation.

Approximately 39% of impalpable testes will become palpable following HCG administration. For those with an impalpable testis at the time of surgery, an initial inguinal approach is recommended for those in whom HCG fails. It is controversial whether laparoscopy should be routinely performed. Laparoscopy is not justified in most cases and may obviate further intervention in only 15% of cases. The nonpalpable testis may be managed with a Fowler-Stephens approach, a Koop orchiopexy, a 2-stage procedure, revascularization, or orchiectomy.

Minimally Invasive Urology/Stones

Laparoscopy [Dr Gill]. Laparoscopic techniques are now being used for radical nephrectomy, nephrectoureterectomy, and donor nephrectomy. Compelling data suggest that the kidney will soon be in the domain of the laparoscopic surgeon. It is readily apparent that there exists a significant learning curve for performing laparoscopic nephrectomies. When performed by skilled surgeons, the surgical time between open and laparoscopic radical nephrectomy is not different. The primary advantage of the laparoscopic approach is that pain and the hospital stay are markedly reduced and that blood loss appears to be less.

Of 12 patients treated with laparoscopic cryoablation for small, solid renal masses and followed for 6 months, the subsequent biopsies of the lesions were negative for cancer in all patients, and no patient developed evidence of local or systemic recurrences. Longer follow-up is essential; howev-

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2000 NYU Course

The 2000 Post-Graduate Course of the department of urology at the NYU School of Medicine will be held December 7-9. The primary sessions will focus on prostate cancer, BPH, urinary incontinence, erectile dysfunction, renal imaging, and bladder cancer. Lectures will be delivered on laparoscopy, pediatric urology, infertility, and nephrolithiasis. An internationally renowned faculty will be assembled. To receive a registration form for the 2000 course, fax your request to (212) 263-6303. Please include your name, address, telephone, and fax numbers.

er, this very minimally invasive intervention appears promising.

Urothelial malignancies [Dr Grasso]. Results of the NYU experience with ureteropyeloscopic diagnosis in the management of upper urinary tract urothelial malignancies show that papillary, low-grade, low-stage tumors of the upper urinary tract are amenable to endoscopic resection with respect to size and location. In patients with high-grade lesions, radical surgery should be offered in light of the high rate of disease progression.

Obstructed ureter [Dr Grasso]. High-frequency intraluminal sonography can be used to evaluate the ureteral lumen, wall, and periureteral tissues. The intraluminal catheters are placed into the ureter directly. Endoscopic treatment of ureteral strictures is ultimately based on the intraluminal sonographic and endoscopic findings. In 10 of 63 cases at NYU, periureteral vessels were noted that varied in location, depending on the segment of ureter involved. Endoscopic incisions were directed away from the adjacent vessel to prevent intraoperative hemorrhage. The diagnosis of endometriosis involving the ureter was made in several cases. Intraluminal ultrasonography appears to be a very useful technology for determining the etiology and optimal management of the obstructed ureter. ■

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